Maria João Chinita

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RESEARCH INTERESTS

My research interests focus on atmospheric boundary layers and its modelling using a variety of models and observations to better understand the small-scale processes and turbulence structure, and thereby assist the development of parameterizations for convective and stable boundary layers in numerical weather prediction and climate models.

PROFESSIONAL EXPERIENCE

2019 **University of California, Los Angeles JIFRESSE,** affiliated with and physically located at Jet Propulsion Laboratory, Pasadena, California

• Postdoctoral scholar – ongoing (since May 2019)

Research in boundary layer processes from both weather and climate perspectives using modeling and remote sensing datasets.

2017 – 2018 **University of Connecticut – Department of Mechanical Engineering,** Storrs, Connecticut

• Gratis affiliation as research scientist

Research in strongly stable planetary boundary layers using large-eddy simulations.

Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California

• Participation in the JPL Visiting Student Researchers Program (JVSRP) between September (2017) and February (2018)

Research in strongly stable planetary boundary layers using large-eddy simulations.

2016 **Jet Propulsion Laboratory, California Institute of Technology**, Pasadena, California

• Participation in the JPL Visiting Student Researchers Program (JVSRP) between February and December

Research in turbulent flow decomposition to guide the development and evaluation of boundary layer convection parameterizations.

2015 **Jet Propulsion Laboratory, California Institute of Technology**, Pasadena, California

• Participation in the JPL Visiting Student Researchers Program (JVSRP) between April and September

Research in stable planetary boundary layers within the GABLS4 (GEWEX Atmospheric Boundary Layer Study) intercomparison study.

2012 – 2014 **Faculty of Sciences of the University of Lisbon**, Lisbon, Portugal

• Research fellowship in IDL (an Associate Laboratory at the University of Lisbon) under the project SMOG – "Structure of Moist Convection in high-resolution GNSS observations and models"
• WRF-ARW simulations

Climatological study of mesoscale processes using WRF model data.
Numerical study of the physical structure of extreme mid-latitude cyclones using WRF model.
Study of the relation between GPS tropospheric delay and water vapor content.

2012 **Faculty of Sciences of the University of Lisbon**, Lisbon, Portugal

• Assistant in theorical-practical lessons of Meteorology

EDUCATION

2014 – 2018 **Faculty of Sciences of the University of Lisbon**, Lisbon, Portugal
Ph.D. in Meteorology

Thesis: *Dynamics of the moderately stable boundary layer*.
(http://hdl.handle.net/10451/35919)
Advisors: Pedro Miranda (IDL/University of Lisbon), Georgios Matheou (UCONN), and João Teixeira (JPL/NASA).

2011 – 2013 **Faculty of Sciences of the University of Lisbon**, Lisbon, Portugal
Master in Meteorology with 18/20 values.

Thesis: *Study of the structure of the field of water vapour in severe storms in continental Portugal.* (Grade: 19 values)

2008 – 2011 **Faculty of Sciences of the University of Lisbon, Lisbon, Portugal**
Bachelor in Geophysical Sciences with 16/20 values.

Final project: *Study of the geometry of the cost function in the context of data assimilation in chaotic systems.* (Grade: 19 values)

AWARDS

Best Early-Career Scientist Poster at 3rd Decennial Workshop – Turbulence in Stably Stratified Planetary Boundary Layers, Delft (Netherlands), 2017.

PUBLICATIONS IN REFEREED JOURNALS

Chinita, M. J., G. Matheou, and J. Teixeira, (2018): A joint probability density-based decomposition of turbulence in the atmospheric boundary layer. *Mon. Wea. Rev*., 146, 503-523, https://doi.org/10.1175/MWR-D-17-0166.1

Soares, P. M. M., R. M. Cardoso, A. Semedo, **M. J. Chinita** and R. Ranjha (2014): Climatology of Iberia Coastal Low-Level Wind Jet: WRF High Resolution Results. *Tellus A*, 66, 22377, https://doi.org/10.3402/tellusa.v66.22377

PUBLICATIONS IN PREPARATION

Chinita, M. J., G. Matheou, P. Miranda, and J. Teixeira (2019): Large-eddy simulation of very stable boundary layers. Part I: Modeling methodology - *to be submitted to publication*.

Chinita, M. J., G. Matheou, P. Miranda, and J. Teixeira (2019): Large-eddy simulation of very stable boundary layers. Part II: Turbulence structure - *to be submitted to publication*.

Couvreux, F., E. Bazile, B. Maronga, G. Matheou, **M. J. Chinita**, J. Edwards, B. Van Stratum, C. van Heerwaarden, J. Huang, A. F. Moene, V. Fuka, S. Basu, A. Cheng, Q. Rodier, E. Bou-Zeid, G. Canut, and E. Vignon (2019): The GABLS4-LES exercise: a challenging intercomparison for LES in very stable conditions - *to be submitted to publication.*

ORAL COMMUNICATIONS

Chinita, M. J. and G. Matheou (2018): Large-eddy simulation of very stable boundary layers: Turbulence structure. *GABLS4 workshop 2018*, Toulouse (France).

Chinita, M. J. and G. Matheou (2017): Buoyancy-adjusted stretched-vortex model. *3rd Decennial Workshop – Turbulence in Stably Stratified Planetary Boundary Layers*, Delft (Netherlands).

CONFERENCE POSTER COMMUNICATIONS

Chinita, M. J. and G. Matheou (2017): Large-eddy simulation of the very stable boundary layer. *3rd Decennial Workshop – Turbulence in Stably Stratified Planetary Boundary Layers*, Delft (Netherlands).

Chinita, M. J. and G. Matheou (2016): Large-eddy simulation of the very stable boundary layer. *AGU Fall Meeting,* San Francisco (USA).

Soares, P. M. M., A. Semedo, R. M. Cardoso, **M. J. Chinita,** and R. Ranjha (2013): The Coastal Low-Level Jet off the West Cost of the Iberian Peninsula: Euro-Cordex simulation. *International Conference of Regional Climate* – CORDEX 2013, Brussels (Belgium).

Soares, P.M.M., A. Semedo, R. M. Cardoso, **M. J. Chinita,** and R. Ranjha (2013): A Coastal Low-Level Jet Feature off the West Costo of the Iberian Peninsula. *Annual Meeting of the European Geosciences Union* (EGU), Viena (Austria).

WORKSHOPS / SUMMER COURSES

27 – 29/11/2018 **Earth Sciences Simulation Environments**
Barcelona Supercomputing Center, Barcelona, Spain.

This course covered the principles of high-performance computing (HPC) environment oriented towards earth science applications, specifically chemical weather modelling and climate modelling.

02 – 07/07/2017 **Earth-system processes in the Atlantic**
2nd ENA Workshop at Terceira Island, Azores.

15 – 19/08/2016 **NASA Summer School – Using satellite observations to advance climate models**
Caltech, Pasadena, California, USA.